EUROPEAN COMMISSION
Information Society and Media Directorate General

Lisbon Strategy and Policies for the Information Society
Lisbon Strategy and i2010

Use of Computers and the Internet in Schools in Europe 2006

Country Brief: Luxembourg

6 / 2006

Key findings

Almost all schools in Luxembourg now use computers for teaching and have internet access. 77% use the internet via a broadband connection. With this figure Luxembourg ranks at number 12 of the 27 countries participating in the survey. There is some variation between school types: upper secondary schools, with 100% and vocational schools (91%) being the best equipped with broadband access.

A high 88% of the Luxembourgian schools using computers for teaching use them in classrooms with the highest percentage being achieved in primary schools (99%).

70% of Luxembourgian classroom teachers had used computers in class in the 12 months prior to the survey, with some variation across school types

Teachers in vocational schools use computers in class much more frequently than their colleagues in general education with a very high 87% of vocational school teachers using computers in more than half of their lessons.

Only 4% of all and 14% of those teachers not using ICT are not convinced of any benefits of using computers in class, which is a positive sign.

Teachers in Luxembourg have the necessary skills to utilize computers in their teaching. The same applies to the interest of teachers in using ICT in class. Only 3% of teachers not using ICT in class show a lack of interest, which is only a third of the European average figure of 9%.

Virtually all schools in Luxembourg are equipped with computers, and with an average of 20 computers per 100 pupils, Luxembourg ranks at a very good 4th in Europe. Primary schools are best equipped (23 computer per 100 pupils), vocational schools significantly less (8 computer per 100 pupils).

A majority of Luxembourgian teachers are more or less satisfied with the technical access means at their schools: 71% state that their school is well equipped with computers and 82% express the opinion that their internet connection is fast enough. Only 24% wish there were better support and maintenance actions taken. It looks as if teachers in Luxembourg are well equipped with ICT and receive good technical support through their schools.

Primary school teachers (57%) and those in vocational schools (61%) seem to be less ICT competent than those in upper secondary (36%) and lower secondary schools (29%).

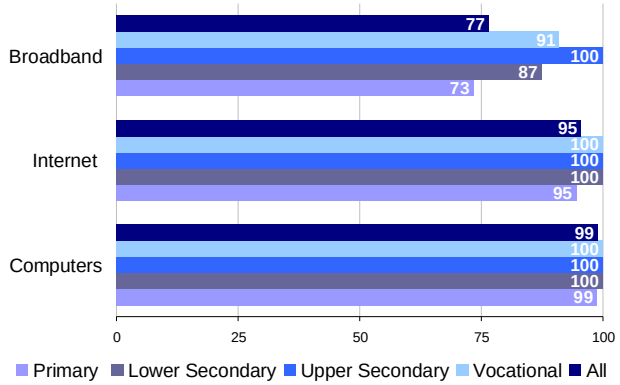
The situation in Luxembourg is very similar to the overall situation in the EU25, with figures very close to the European ones on most indicators of the survey with no dramatic insufficiencies and problems on the one hand and top ranking on the other.

ICT Equipment and Internet in Schools

Almost all schools in Luxembourg now use computers for teaching and have internet access. 77% use the internet via a broadband connection. With this figure Luxembourg ranks at number 12 of the 27 countries participating in the survey. There is some variation between school types: while 73% of primary schools have a broadband internet connection, the penetration is highest among upper secondary schools, with 100% and vocational schools (91%).

64% of schools have a website, 78% offer e-mail to teachers, and 23% do so to pupils. A high 88% of the Luxembourgian schools using computers for teaching, use them in classrooms, with the highest percentage being achieved in primary schools (99%).

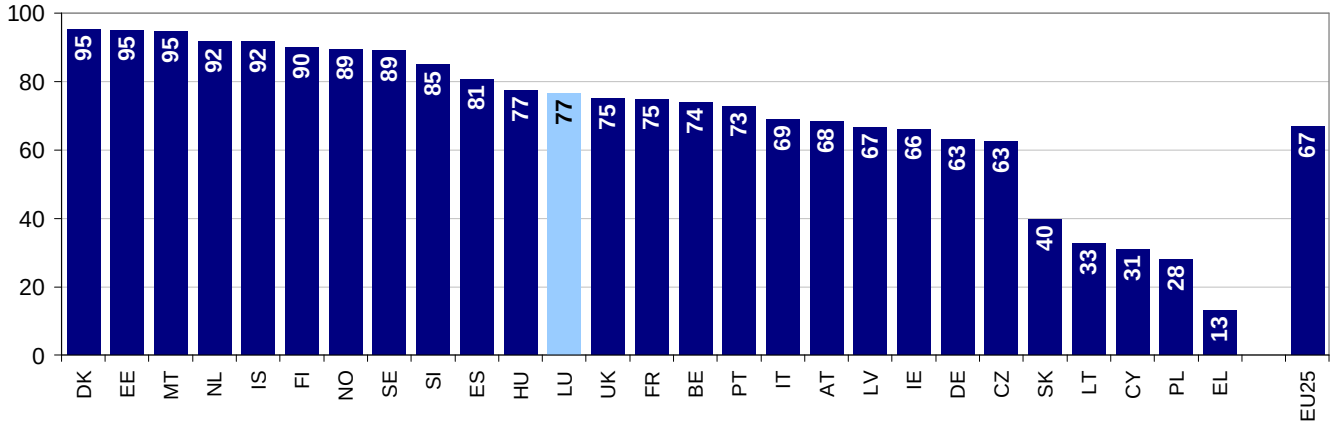
Percentage of Schools Using Computers, Internet Connection, and Broadband Internet Access According to School Type in Luxembourg 2006



Source: *LearnInd HTS 2006;* ***Base:*** *All schools;* ***Question:*** *Computers: Q6; Internet, Broadband: Q9. See questionnaire for exact wording.*

Those schools with a broadband connection to the internet are much more likely to have a more sophisticated ICT infrastructure including a school website, the use of a LAN or the availability of an intranet.

Percentage of Schools with Broadband Internet Access in Europe 2006



Source: *LearnInd HTS 2006;* ***Base:*** *All schools;* ***Question:*** *Q9. See questionnaire for exact wording.*

The use of Computers and the Internet in Schools

Computers are used for various purposes and as part of teaching different subjects in schools.

Computer sciences are taught as a separate subject in just 40% of schools in Luxembourg, mainly in upper level schools. ICT is predominantly used integrated into subject teaching. While this is the case in more than 90% of upper secondary and vocational schools, primary and lower secondary schools reach figures of just over 60%.

70% of Luxembourgian classroom teachers had used computers in class in the 12 months prior to the survey, with some variation across school types. Most intensive users can be found in primary schools (74%) and vocational schools (62%), densely populated areas (77% as opposed to 61% in thinly populated areas) and among younger teachers (85% as opposed to 65% among the older teachers).

For most teachers, this includes not only using a computer for presentation purposes but also the use of computers by pupils in class. Surprisingly little variation can be found in this respect according to the subjects of teaching[1].

A majority (62%) of the teachers using computers use them in less than 10% of all lessons. Only 7% state that they use computers in more than half of their lessons. Teachers in vocational schools use computers in class much more frequently than their colleagues in general education with a very high 87% of vocational school teachers using computers in more than half of their lessons.

ICT equipment in Luxembourgian schools 2006

			Educational Level (LU)				Type of locality (LU)			Internet Access (LU)	
	Total LU	Total EU25	Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated	Narrow-band	Broadband
Computers per 100 pupils [a]	19.8	11.3	22.6	*21.3***	*20.9***	*7.9***	N/A	N/A	N/A	*21.7*	19.0
... of which internet connected	18.3	9.9	20.9	*21.3***	*18.9***	*7.9***	N/A	N/A	N/A	*20.2*	17.7
Percentage of schools having...											
Computers for teaching [b]	99.0	98.7	98.7	*100.0***	*100.0***	*100.0***	N/A	N/A	N/A	*100.0**	100.0
Internet access [c]	95.5	96.2	94.5	*100.0***	*100.0***	*100.0***	N/A	N/A	N/A	*100.0**	100.0
Broadband internet access [d]	76.5	66.9	73.3	*87.4***	*100.0***	*91.1***	N/A	N/A	N/A	*0.0**	100.0
A website [e]	64.4	63.0	56.9	*100.0***	*100.0***	*100.0***	N/A	N/A	N/A	*57.8**	69.9
An e-mail address for the majority of teachers [f]	78.0	65.2	74.1	*100.0***	*91.3***	*100.0***	N/A	N/A	N/A	*61.9**	86.6
An e-mail address for the majority of pupils [g]	22.6	23.5	20.2	*87.4***	*68.9***	*8.9***	N/A	N/A	N/A	*11.2**	26.7
A LAN [h]	58.9	55.2	50.1	*100.0***	*100.0***	*100.0***	N/A	N/A	N/A	*28.3**	69.9
An intranet [i]	54.7	40.8	46.9	*100.0***	*91.3***	*91.1***	N/A	N/A	N/A	*3.0**	70.8
An external support or maintenance contract [j]	28.8	47.1	33.8	*0.0***	*0.0***	*8.9***	N/A	N/A	N/A	*26.3**	31.1
Percentage of schools using computers for education in…											
Computer labs [k]	44.3	80.5	32.3	*100.0***	*100.0***	*100.0***	N/A	N/A	N/A	*33.8**	47.6
Classrooms [l]	88.2	61.4	98.7	*80.1***	*82.6***	*14.6***	N/A	N/A	N/A	*100.0**	86.3
School library [m]	33.5	33.4	26.5	*100.0***	*72.6***	*57.3***	N/A	N/A	N/A	*26.2**	36.8
Other locations accessible for pupils [n]	26.4	27.0	23.3	*67.5***	*50.2***	*42.7***	N/A	N/A	N/A	*26.1**	27.6

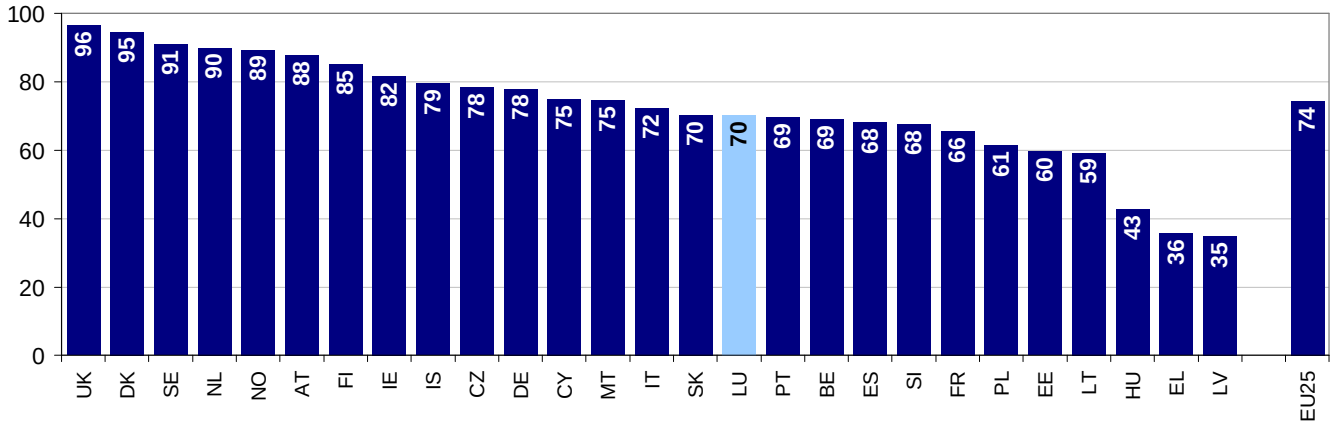
Source: *LearnInd HTS 2006;* ***Base:*** *a: all pupils; b-j: all schools, k-n: schools using computers for educational purposes for pupils (cf. index b);* ***Question:*** *a: Q4, Q6, Q7; b: Q6; c: Q9; d: Q9; e-j: Q12; k-n: Q8. See questionnaire for exact wording.* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases; "xx.x** " based on less than 10 cases. No type of locality breakdown possible due to small sample size.*

Use of computers in class in Luxembourg 2006

Assessments of the head teacher		Total LU	Total EU25	Educational Level (LU)				Type of locality (LU)			Internet Access (LU)	
				Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated	Narrow-band	Broadband
Computer sciences taught as separate subject	Agree	39.9	54.7	33.3	*100.0***	*86.3***	*57.3***	N/A	N/A	N/A	*35.8**	*42.8**
	Disagree	56.7	43.7	63.7	*0.0***	*0.0***	*42.7***	N/A	N/A	N/A	*64.2**	*52.8**
	Don't know	3.4	1.6	3.0	*0.0***	*13.7***	*0.0***	N/A	N/A	N/A	*0.0**	*4.4**
Computers and the internet are												
integrated into teaching of most subjects	Agree	68.6	75.3	65.4	*60.2***	*91.3***	*94.3***	N/A	N/A	N/A	*38.2**	*77.9**
	Disagree	26.5	24.1	31.1	*19.9***	*0.0***	*0.0***	N/A	N/A	N/A	*61.8**	*17.6**
	Don't know	4.9	0.6	3.5	*19.9***	*8.7***	*5.7***	N/A	N/A	N/A	*0.0**	*4.5**
used for teaching traditional subjects or basic skills	Agree	60.3	75.8	65.2	*60.2***	*32.8***	*51.6***	N/A	N/A	N/A	*67.4**	*59.9**
	Disagree	36.4	22.8	31.5	*39.8***	*67.2***	*42.7***	N/A	N/A	N/A	*32.6**	*35.8**
	Don't know	3.3	1.4	3.3	*0.0***	*0.0***	*5.7***	N/A	N/A	N/A	*0.0**	*4.2**
used for teaching foreign languages	Agree	65.4	56.6	66.7	*67.5***	*77.6***	*57.3***	N/A	N/A	N/A	*76.4**	*64.3**
	Disagree	31.7	40.1	29.8	*32.5***	*22.4***	*42.7***	N/A	N/A	N/A	*23.6**	*32.0**
	Don't know	2.9	3.3	3.5	*0.0***	*0.0***	*0.0***	N/A	N/A	N/A	*0.0**	*3.7**
used for teaching students with special needs/ handicaps	Agree	78.4	71.7	83.6	*80.1***	*55.2***	*57.3***	N/A	N/A	N/A	*87.0**	*76.6**
	Disagree	20.2	23.7	14.7	*19.9***	*44.8***	*42.7***	N/A	N/A	N/A	*13.0**	*21.5**
	Don't know	1.4	4.6	1.8	*0.0***	*0.0***	*0.0***	N/A	N/A	N/A	*0.0**	*1.9**

Source: *LearnInd HTS 2006;* ***Base:*** *All schools using computers for educational purposes for pupils;* ***Question:*** *Q13: "To what extent do you agree or disagree with the following statements regarding the educational use of computers and/or the internet in your school?"* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases; "xx.x** " based on less than 10 cases. No type of locality breakdown possible due to small sample size.*

Percentage of teachers who have used computers in class in the last 12 months (2006)



Source: *LearnInd CTS 2006;* ***Base:*** *All teachers;* ***Question:*** *Q7. See questionnaire for exact wording*

Teachers' use of computers in class in Luxembourg 2006

Percentage of teachers who ...	Total LU	Total EU25	Educational Level (LU)				Type of locality (LU)			Years of teaching experience (LU)			
			Primary	Lower secon-dary	Upper secon-dary	Voca-tional	Densely popu-lated	Inter-mediate	Thinly popu-lated	<5 y	5-9 y	10-19 y	20+ y
...have used computers in class[2]	70.2	74.3	74.4	*54.2**	43.6	*61.8**	76.6	72.7	60.8	*85.1**	61.4	79.2	65.2
...use a computer in class to present or demonstrate	54.4	63.4	60.2	*31.5**	26.2	*10.1**	62.8	61.9	38.6	*61.6**	43.0	54.4	57.0
...have pupils use a computer in class	58.7	66.3	62.4	*38.2**	32.9	*59.7**	63.1	57.3	54.8	*58.4**	52.2	62.0	60.5

Source: *LearnInd CTS 2006;* ***Base:*** *All teachers;* ***Question:*** *Q7 "How have you used computers and/or the internet for work in the last 12 months?"* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases.*

Frequency of computers use in class Luxembourg 2006

Percentage of all teachers *using computers in class* who …	Total LU	Total EU25	Educational Level (LU)				Type of locality (LU)			Years of teaching experience (LU)			
			Primary	Lower secon-dary	Upper secon-dary	Voca-tional	Densely popu-lated	Inter-mediate	Thinly popu-lated	<5 y	5-9 y	10-19 y	20+ y
…use computers in 5% and less of all lessons	44.4	18.5	49.1	*15.6**	*15.0**	*0.0***	44.9	51.3	37.2	*58.2**	*31.4**	*41.9**	44.5
in 6 to 10% of lessons	18.0	22.5	19.1	*12.5**	*12.8**	*0.0***	18.0	17.3	18.6	*10.3**	*19.2**	*19.0**	20.8
in 11 to 24% of lessons	17.6	22.2	16.7	*18.6**	*23.9**	*13.4***	16.7	13.4	22.9	*11.8**	*21.0**	*16.4**	19.6
in 25 to 50% of lessons	13.2	20.2	13.2	*16.7**	*16.9**	*0.0***	18.3	14.7	4.3	*9.6**	*11.6**	*16.4**	14.1
more than 50% of lessons	6.8	16.5	1.8	*36.7**	*31.5**	*86.6***	2.1	3.4	17.0	*10.0**	*16.8**	*6.4**	0.9

Source: *LearnInd CTS 2006;* ***Base:*** *Teachers using computers in class, "don't know" answers excluded;* ***Question:*** *Q9 "For what percentage of time have you used computers and/or the internet in class when teaching your main subject(s) in the past 12 months?"* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases; "xx.x** " based on less than 10 cases.*

Luxembourgian teachers using computers do not restrict themselves to a particular source of information but use a multitude of different material from a variety of sources for teaching purposes which in most categories is below the European average. While vocational school teachers make heavy use of material they have searched on the internet (91%), CD ROMs are mostly used by lower level schools.

Not surprisingly, the older the teachers (indicator used here: years of teaching experience), the less use they make of computers and the internet in schools. While 27% of teachers with less than 10 years teaching experience use ICT in more than half of their lessons, this figure reaches only 7% among those with more than 10 years of teaching experience. Most teachers – regardless of school type – use ICT in up to 10% of their lessons. The figures range from 50% among those with 5-9 years of teaching experience, up to 68% of those with less than five years of teaching experience.

30% of teachers in Luxembourg still do not use computers in class. When asked for the most important barrier, 36% state a lack of computers in their schools as an important barrier (with the highest figures in primary schools with 38%), and 37% state that their subject does not lend itself to being taught via computers, while the latter mainly applies to vocational schools (71%).

Only 4% of all and 14% of those teachers not using ICT are not convinced of any benefits of using computers in class, which is a positive sign.

Lack of the necessary skills to utilize computers in their teaching does not seem to be an issue in schools in Luxembourg. The same applies to "lack of interest of teachers" which applies to only 3% of teachers not using ICT in class, which is only a third of the European average figure of 9%.

Virtually all schools in Luxembourg are equipped with computers, and with an average of 20 computers per 100 pupils, Luxembourg ranks at a very good 4th in Europe. Primary schools are best equipped (23 computer per 100 pupils), vocational schools significantly less (8 computer per 100 pupils).

Comparison of the situation in 2001 and 2006[3]

In Luxembourg the percentage of schools using computers for educational purposes has risen over the past 5 years from an already high 94% in 2001 to 99% in 2006.

Schools have moved over to broadband. 77% (EU25: 45%) of the schools in Luxembourg are connected to the internet via a DSL connection in 2006. The figure for 2001 was just 3% (EU15: 5%). The figures have increased strongly over the past 5 years.

Schools have also strongly increased the quality of ICT use: while in 2001 45% (EU15: 44%) of the schools in Luxembourg had their own website, the figure is now 64% (EU25: 62%). The use of a LAN – which was used by 49% (EU15: 47%) of the Luxembourgian schools – is also now up to 59% (EU25: 54%).

Source of educational material used in class in Luxembourg 2006

Percentage of all teachers *using computers in class*[4] who …	Total LU	Total EU25	Educational Level				Type of locality		
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated
…use material they have searched the internet for	72.8	82.7	73.5	*72.2**	*63.4**	*90.5***	66.2	75.1	80.2
…use existing online material from established educational sources	54.6	74.2	56.1	*32.6**	*31.5**	*47.9***	55.3	56.1	52.1
…use material that is available on the school's computer network or database	54.9	63.1	55.0	*39.9**	*41.7**	*45.2***	58.3	52.7	52.1
…use electronic offline material (such as CD ROMS)	66.8	83.0	68.8	*73.9**	*64.8**	*52.1***	67.5	67.8	64.8
…use other learning material when using computers in class	2.3	8.8	2.3	*0.0**	*3.6**	*3.4***	0.4	3.2	4.2

Source: *LearnInd CTS 2006;* ***Base:*** *Teachers using computers in class;* ***Question:*** *Q10 "Which of the following types of materials have you used when teaching your main subject(s) with the aid of a computer and/or the internet?"* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases; "xx.x** " based on less than 10 cases.*

Barriers to computer use in class in Luxembourg 2006

Percentage of all teachers ***not*** *using computers in class*	Total LU	Total EU25	Educational Level				Type of locality		
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated
Lack of computers	35.6	48.8	38.4	*18.6**	*29.2**	*15.4***	*45.6**	*32.5**	*30.5**
Lack of adequate content/material	18.5	20.3	15.4	*39.6**	*26.1**	*9.8***	*12.9**	*31.1**	*15.2**
Lack of content in national language	0.0	8.6	0.0	*0.0**	*0.0**	*0.0***	*0.0**	*0.0**	*0.0**
Lack of adequate skills of teachers	10.1	22.5	13.1	*2.8**	*3.1**	*5.6***	*20.7**	*7.1**	*4.4**
No or unclear benefits	14.1	16.2	11.9	*31.7**	*20.6**	*0.0***	*20.7**	*0.0**	*17.4**
Lack of interest of teachers	2.8	8.9	4.0	*0.0**	*0.0**	*0.0***	*6.0**	*0.0**	*2.2**
Subject does not lend itself to being taught via computers	37.2	24.4	33.0	*50.3**	*47.8**	*70.5***	*33.6**	*42.2**	*36.9**
Other	12.6	21.3	15.8	*2.2**	*2.8**	*8.5***	*7.4**	*18.2**	*13.1**

Source: *LearnInd CTS 2006;* ***Base:*** *all teachers not using computers in class;* ***Question:*** *Q12: "Why do you not use computers and/or the internet when teaching in class?"* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases; "xx.x** " based on less than 10 cases.*

Attitudes on ICT use in Teaching

Computers and the internet have arrived in Luxembourgian schools and their use is steadily improving. The share of teachers in the European Union who believe that computers and the internet should not be used at all in schools is low and below 1% but comparatively high in Luxembourg with 4%.

Luxembourgian teachers have positive attitudes to the different applications of ICT in teaching but achieve figures below the European average on attitudes that ICT should be used for letting pupils do exercises and practise (43%), letting pupils retrieve information in a self-directed manner (76%) and for collaborative and productive work by pupils (66%). There are only some differences across school types with the teachers in primary schools responding positively to these questions more often.

Access, Competence and Motivation for Using ICT and the Internet in Schools

Access

The majority of Luxembourgian teachers are more or less satisfied with the technical access means at their schools: 71% state that their school is well equipped with computers and 82% express the opinion that their internet connection is fast enough. Only 24% wish there were better support and maintenance actions taken. It looks as if teachers in Luxembourg are well equipped with ICT and receive good technical support through their schools.

In terms of content 45% state problems with respect to finding adequate learning materials and 35% argue that existing material are of poor quality.

Attitudes on the Usefulness of ICT use in Teaching in Luxembourg 2006

Percentage of teachers saying computers/internet should be used for …	Total LU	Total EU25	Educational Level				Type of locality		
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated
Letting pupils do exercises and practise	43.1	79.9	45.7	*43.3**	32.4	*17.6**	37.2	47.7	46.2
Letting pupils retrieve information in a self-directed manner	76.2	85.0	74.9	*82.6**	82.7	*93.0**	69.3	71.8	88.0
Teaching about office tools	20.0	61.3	20.7	*16.0**	16.6	*11.8**	15.7	27.5	18.9
Collaborative and productive work by pupils	66.0	80.5	71.8	*22.6**	31.3	*39.2**	62.5	68.2	68.5
Computer/internet should not be used for any of these in teaching	3.8	0.6	3.8	*2.0**	4.0	*1.6**	5.2	5.3	0.9

Source: *LearnInd CTS 2006;* ***Base:*** *all teachers;* ***Question:*** *Q13: "What do you think for what computers and the internet should be used for in teaching?"* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases*

Competence in using ICT

Luxembourgian teachers feel most competent in using e-mail and using a text processor programme but are less confident with downloading and installing software and with using presentation software packages.

Primary school teachers (57%) and those in vocational schools (61%) seem to be less ICT competent than those in upper secondary (36%) and lower secondary schools (29%).

Motivation for ICT use in Schools

Over 80% of Luxembourgian teachers see significant learning benefits for pupils using computers in class and say that pupils are more motivated and attentive when computers and the internet are used in class.

Teachers' access, competence and motivation for using ICT in class 2006

Percentage of teachers agreeing or strongly agreeing:	Total LU	Total EU25	Educational Level: Primary	Lower secondary	Upper secondary	Vocational	Subject of teaching: General primary	Literature and languages	Humanities and social sciences	Science, maths, computer sciences	Physical, artistic, crafts education	Vocational education
Access												
Our school is well equipped with computers [a]	70.9	74.2	68.5	*87.4**	80.7	*97.9**	68.6	66.3	*79.6**	61.2	*95.2**	*93.3**
The internet connection we have is sufficiently fast [b]	81.5	77.2	80.9	*93.6**	81.5	*73.5**	81.3	84.0	*84.6**	81.2	*55.2**	*94.4**
Better technical maintenance and support is required in our school [c]	54.8	64.8	54.9	*52.6**	59.7	*57.0**	56.1	52.9	*41.2**	59.5	*61.7**	*53.9**
Existing teaching materials on the Internet are of poor quality [d]	35.3	29.9	33.3	*36.0**	41.8	*83.3**	32.6	32.8	*31.2**	30.9	*57.0**	*56.8**
It is hard to find adequate learning materials for teaching [e]	44.6	38.7	45.8	*35.0**	34.4	*50.7**	43.6	47.8	*50.3**	48.2	*63.1**	*34.2**
Motivation												
Pupils are more motivated and attentive when computers and the internet are used in class [f]	83.9	86.3	84.3	*82.4**	79.9	*94.1**	86.7	65.4	*86.8**	80.7	*87.1**	*92.4**
Using computers in class does not have significant learning benefits for pupils [g]	23.8	20.7	22.8	*31.4**	33.3	*25.8**	23.1	22.9	*39.4**	22.2	*37.2**	*0.0**
Competence												
Teachers in our school do not have sufficient computer skills [h]	54.2	42.0	56.8	*29.2**	36.2	*61.4**	56.7	56.5	*41.7**	53.2	*74.9**	*21.1**
Competence / computer skills (Percentage of teachers who feel very confident at…)												
Using text processors [i]	62.3	65.0	62.1	*50.1**	53.4	*58.2***	62.5	62.9	*63.1**	69.0	*70.5**	*40.1**
Creating electronic presentations [j]	24.2	34.0	19.4	*49.7**	54.7	*87.0***	20.6	29.5	*14.8**	26.9	*15.5**	*58.9**
Using e-mail [k]	79.5	65.9	77.6	*89.1**	88.8	*100.0***	76.7	84.9	*87.0**	90.0	*65.8**	*100.0**
Downloading and installing software [l]	39.5	35.8	39.1	*20.5**	30.0	*54.8***	37.0	48.7	*26.9**	55.1	*13.3**	*25.2**

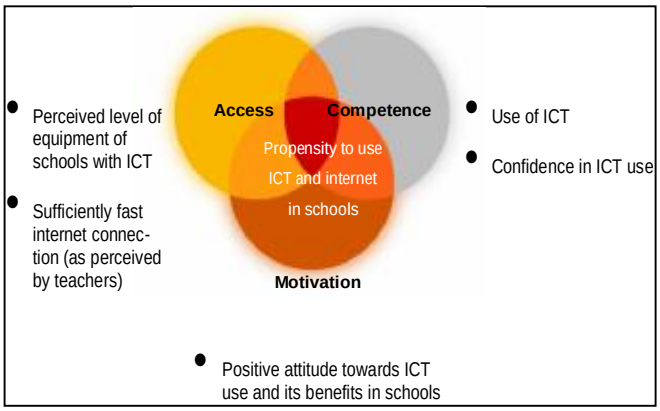
Source: *LearnInd CTS 2006;* ***Base:*** *a-h All teachers; i -l Teachers using computers in class* ***Question:*** *a-h Q14, i-l Q11.* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases; "xx.x** " based on less than 10 cases.*

ICT Readiness of Teachers – the ACM Model

The ACM model as developed by Viherä and Nurmela (2001)[5] was applied in LearnInd to generate a typology according to the "propensity to the use of computers and internet by teachers in classroom situations at schools".

The typology in the figure below takes account of the three main categories of preconditions which need to be given for a school to make use of computers and the internet in the teaching process in classrooms, computer labs etc.

The Access-Competence-Motivation Model



These are: access (to computers and the internet at school), competence (in using the computer software and the internet, and applying it for teaching purposes), and motivation (gauged through the attitude that using computers in classrooms results in significant learning benefits).

Any attempt to group the classroom teachers according to their propensity to becoming users of computers and the internet in their teaching processes needs to take account of these three dimensions. In the present application of the ACM model data from the Classroom Teacher Survey (CTS) was used. Therefore "access" for instance is to be understood as a perceived level of computer equipment at schools and teachers' satisfaction therewith rather than an objective measure of equipment status.

Access, Motivation and Competence of Teachers for Using ICT in Schools in Luxembourg 2006

LU	EU25	Access	Competence	Motivation
4.8	4.3	~~Access~~	~~Competence~~	~~Motivation~~
5.5	3.9	**Access**	~~Competence~~	~~Motivation~~
8.4	9.7	~~Access~~	**Competence**	~~Motivation~~
3.5	5.0	~~Access~~	~~Competence~~	**Motivation**
14.1	13.7	**Access**	**Competence**	~~Motivation~~
4.6	4.8	**Access**	~~Competence~~	**Motivation**
18.1	20.7	~~Access~~	**Competence**	**Motivation**
41.0	37.9	**Access**	**Competence**	**Motivation**
100	100			

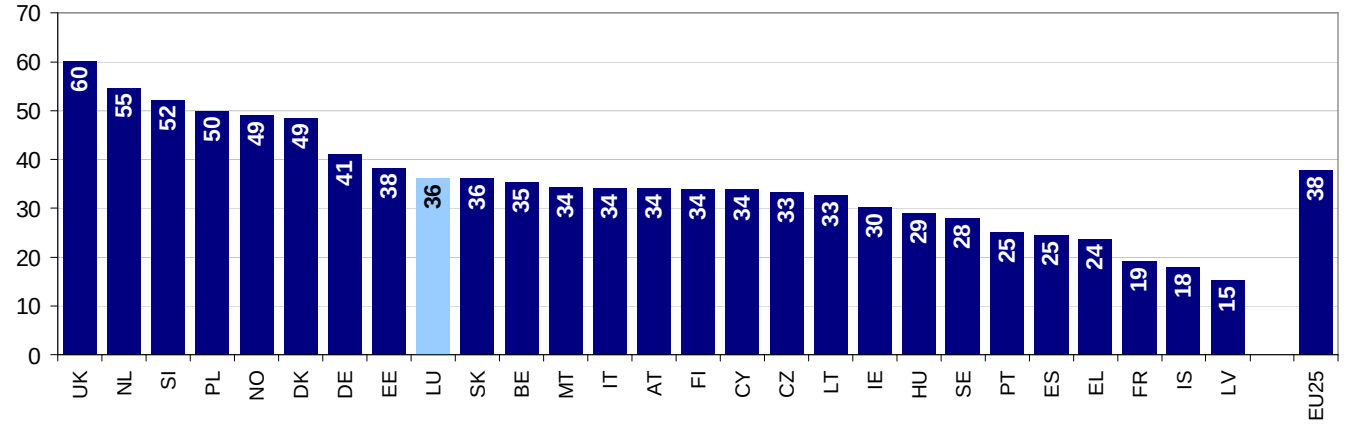
Percentage of teachers. ***Source:*** *LeanInd CTS 2006;* ***Base:*** *All teachers;* ***Question:*** *See endnote* [6]

38% of European teachers dispose of sufficient access to the internet at school, the necessary competence in using ICT in class and are motivated to its use. With 36% of the teachers belonging to this group, Luxembourg ranks at 10th, placing the country in solid position in the second half of European countries. Overall the UK with 60% ranks top and Latvia with 15% finds itself at the very end.

Considering all aspects of the ACM model, Luxembourgian teachers come up with a rather good ICT readiness and rank 9th, i.e. just in the top third of European countries.

The situation in Luxembourg is very similar to the overall situation in the EU25 with figures very close to the European ones on most indicators of the survey with no dramatic insufficiencies and problems on the one hand and top ranking on the other.

ICT Readiness of Teachers in Luxembourg: Percentage of Teachers Fully Ready to use Computers in Class (ACM Indicator) 2006



Source: *LeanInd CTS 2006;* ***Base:*** *All teachers.* ***Question:*** *See endnote 5*

ANNEXES

Methodology Report

Universe / Sample population

In order to assure the comparability of school levels in all countries UIS-OECD-EUROSTAT "Mapping of national education programmes to ISCED 97 for school academic/year 2002/2003" [7] was used for composing the sample frame. Based on this, each country divided its school system into ICSED codes and made different combinations that existed in its country.

Sampling frame and method

The sample was composed using official databases, which contained contact data of schools. In the majority of countries the sample was drawn from a database received from the Ministry of Education.

For each country a separate template of sample frames was composed by TNS Emor. These templates contained data about school types across regions as well as location type. School types were defined based on the ISCED codes provided in UIS-OECD-EUROSTAT. Location type distribution was made according to the Eurostat type of locality classification which differentiates densely populated, intermediate and thinly populated municipalities[8]. Apart from that, each country was divided into 3-7 regions depending on the size of a country.

Based on the data provided by countries, TNS Emor composed quotas for each country. Two level stratification was used – quotas for first stage, random sample for second. The quotation for region by school type and location type was endorsed. Simple random selection was conducted by the local agency or the local source of the contact base. Both private and public schools were included in the sample. It was also obligatory to include schools of other teaching languages than the official language of a country in the sample.

Simple random sampling was used inside a quota cell. This means that if the quota for primary schools in region1 was 100 and the total number of primary school in this region was 800, then a random sample selection was be made among those 800 schools. This covered both private and public schools and schools of other teaching languages than the official language of a country.

No more than 50% of interviews could be made in one school level. At least 10% of respondents had to be from schools which provided professional/vocational or combined programme of vocational and upper secondary level education (in case a country did not have special quota for those schools). It did not matter whether vocational education level was coded as ISCED 3 or ISCED 4.

There were no duplications in samples of head teacher and classroom teacher surveys. This was only allowed in countries with small universe sizes (e.g. Malta, Cyprus, Iceland, Estonia, Latvia etc) and in cases where the last quota cells were very difficult to achieve or there were not enough schools of a certain type. The priority was to include as many different schools as possible. In both surveys, 5 attempts were made before giving up and only if the respondent refused was this person not contacted again.

The CATI programme generated a randomly chosen letter. The interviewer asked for the person with a surname that started on the generated letter. If there was more than one teacher whose surname started with the selected letter, the person who was first alphabetically was chosen. If the correct person was not available, an appointment was made. At least 5 attempts were made before taking another teacher.

Only in Malta, due to instructions dictated by the Education Department, would the Head Teacher randomly select a teacher who would be available for an appointment during which they would be interviewed.

Number of interviews conducted (HTS / CTS)

Country		Head Teachers	Classroom teachers
BE	Belgium	450	807
CZ	Czech Republic	500	1000
DK	Denmark	315	848
DE	Germany	450	901
EE	Estonia	400	851
EL	Greece	500	1000
ES	Spain	518	1022
FR	France	501	869
IE	Ireland	403	626
IT	Italy	500	900
CY	Cyprus	150	600
LV	Latvia	451	902
LT	Lithuania	457	908
LU	Luxemburg	82	277
HU	Hungary	500	1000
MT	Malta	100	200
NL	Netherlands	515	890
AT	Austria	320	450
PL	Poland	500	1000
PT	Portugal	450	900
SI	Slovenia	253	460
SK	Slovakia	502	1000
FI	Finland	318	601
SE	Sweden	200	450
UK	United Kingdom	450	905
IS	Iceland	177	424
NO	Norway	494	708
TOTAL		**10456**	**20499**

Fieldwork

Fieldwork was coordinated by the TNS Emor and conducted in cooperation with its local TNS offices excluding Iceland, Cyprus, Austria, Slovenia and Malta where TNS does not have offices. In these countries partners with whom TNS had previous experience were used.

Pilot interviews prior to the regular fieldwork were conducted with 20 schools in both target groups in Estonia and Greece in February 2006, in order to test the questionnaire (structure, comprehensibility of questions).

Between March and April 2006, surveys among head teachers (head teacher survey - HTS) and classroom teachers (CTS) were carried out in 27 European countries of Europe. TNS Emor was responsible for the fieldwork.

Weighting schemes

After the fieldwork, weighting coefficients were computed using region, location type and school type.

Statistical accuracy of the survey: confidence intervals

Statistics vary in their accuracy, depending on the kind of data and sources. A "confidence interval" is a measure that helps to assess the accuracy that can be expected from data. The confidence interval is the estimated range of values on a certain level of probability of error. Confidence intervals for estimates of a population fraction (percentages) depend on the sample size, the probability of error, and the survey result (value of the percentage) itself. Further to this, variance of the weighting factors has negative effects on confidence intervals.

The calculation of confidence intervals is based on the assumption of (quasi-) infinite population universes. In practice, however, in some countries and for some school levels the complete population of schools consists of only several hundred or even a few dozen of schools. In some cases, literally each and every school within a country-school type cell was contacted and asked to participate in the survey. This means that it is practically impossible to achieve a higher confidence interval through representative school surveys in which participation is not obligatory.

Country Background Data

Luxembourg has a GDP per Capita which about twice as high as the average of the other Member States. The GDP growth rate is low. The pupil/teacher ratio is one of the best in Europe, but public expenditure on education as a percentage of GDP is at the tail end in Europe.

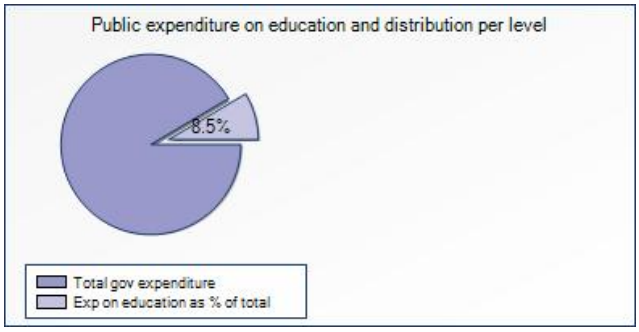
General Population Data for Luxembourg 2002/03[9]

Total population (000)	447
Annual population growth rate (%)*	0.9
Population 0-14 years (%)	19
Rural population (%)*	8
Total fertility rate (births per woman) *	1.6
Infant mortality rate (0/00) *	4
Life expectancy at birth (years) *	78
GDP per capita (PPP) US$ *	60,026
GDP growth rate (%)*	1.7
* World Bank World Development Indicators	

Resources for Education in Luxembourg 2002/03

Pupil / teacher ratio (primary)	11
Public expenditure on education :	
as % of GDP	3.6
as % of total government expenditure	8.5
Distribution of public expenditure per level (%):	
pre-primary	…
Primary	…
Secondary	…
tertiary	…
unknown	…

Resources for Education in Luxembourg 2002/03



The Educational System in Luxembourg[10]

In 2003, the number of young people aged under 29 was 165,759 (37% of the population), and 67,831 pupils were of compulsory education age. The language of instruction depends on the level of education. In pre-primary school and the first two years of primary school, Luxemburgish (Letzeburgesch) is the language medium. German is introduced as the language of instruction during the first year of primary school and French from the beginning of the second.

In 2004, 93% of pupils attended public-sector schools and 7% grant-aided private institutions (which, although set up and controlled by non-governmental bodies, received 95-99% of their subsidy from the public sector, specifically to cover their operational expenditure). Overall responsibility for all sectors lies with the Ministry of Education and Vocational Training which takes all major decisions as regards curricula, school books, timetables, budgetary matters and teacher training. Responsibility for primary education is shared by the Ministry and the municipal authorities (in particular the municipal school commissions); there are no school heads at this level. In secondary education, the Ministry of Education and Vocational Training exercises control via the directors of *lycées* and technical *lycées*.

As regards higher education, the Ministry of Culture, Higher Education and Research is responsible for all matters concerning higher education and research. The law of 25th June 2004 has considerably developed the autonomy of secondary schools. School inspectors visit primary schools and report to the Ministry. At secondary level, inspection is under the responsibility of school heads, in accordance with ministerial regulations.

The use of ICT in Education[11]

Based on the Lisbon agenda, the development of a national programme "Education et Formation 2010" for the improvement of the educational system is regarded as an essential prerequisite for a successful and competitive economic sector in Luxembourg. Promoting a democratic society and strengthening social cohesion solidarity, equality and civic participation are the core objectives focussed on.

Brought into life by the Ministry of Education, from 2004 to 2009 the programme aims at improving the quality and efficiency of the educational system and access to education will be facilitated. To achieve these goals, the implementation of information technologies is constantly brought forward. Considerable efforts have been made to provide most of the educational institutions with the necessary equipment. In secondary education, 3.93 pupils share one computer.

Special attention is paid to pedagogical consequences that result from the implementation of new technologies. Therefore, a portal for exchange between pupils and teachers has been created. Documentation tools, a forum for exchange, the provision of a platform for networking with the school community and giving access to exercises provided online are the main advantages capitalised from the implementation of new technologies.

The Study

There is a lack of information on the actual use of ICT for learning in schools and for supporting political action in potential future programmes. It is necessary to clarify matters such as the educational vision of heads of schools, the current impact of ICTs on teachers' practice, support and training and on other factors for success in e-learning.

The objective of the study is to obtain estimates for the eEurope 2005 indicator on e-learning "number of pupils per computer with Internet connection (broadband/non-broadband)" and relate it to other possible indicators of educational use of ICT in compulsory education (e-learning in schools). The study looks at how Information and Communication Technologies (ICT) are used in schools.

The study is a continuation of the earlier benchmarking exercise for eEurope 2002.

It involved two surveys. Firstly of head teachers to obtain information on the schools and then of teachers to focus on their use of ICTs in the teaching process

This exercise is part of the Information Society monitoring and benchmarking process for which the Commission in cooperation with the Council defined benchmarking indicators.

Country Briefs

This document has been prepared by **empirica** based on own desk research and the above mentioned primary data sources: Head Teacher Survey (HTS) 2006 and Classroom Teacher Survey (CTS) 2006 in the EU25 member states, Iceland and Norway.

Altogether 27 LearnInd Country Briefs are available in a common format, one for each member of the enlarged European Union, Norway and Iceland.

A final report has also been developed. It includes approximately 100 exhibits, more than 250 data tables and a report about the key results.

You can access and download these documents in PDF format (for free) from http://ec.europa.eu/information_society/eeurope/i2010/benchmarking/index_en.htm.

More information

Check our results and achievements on: http://ec.europa.eu/information_society/eeurope/i2010/benchmarking/index_en.htm. If you wish to be provided with more details, or to receive news and updates, please contact us at: **learnind@empirica.com** or get in touch with us.

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1 It has to be noted that teachers however in most cases have more than one subject and may use computers only in one subject. This has not been surveyed

2 Note that "in class" means during lessons while teaching and does not denote a particular location such as a classroom.

3 This section includes some comparisons of the Eurobarometer Flash 94/1001 and 95/102 results from 2001 with those from the LearnInd surveys from 2006. Please bear in mind that the figures are not directly comparable due to the use of slightly different approaches and methodologies.

4 Base (100%) = all teachers who have used a computer in class in the last 12 months.

5 Viherä, M-L, Nurmela, J (2001) "Communication Capability Is an Intrinsic Determinant for Information Age", in Futures, Volume 33, Issue 3-4:245-265.

6 Synthetic indicators: Access: Q14 (2) "Our school is well equipped with computers" and Q14 (3) "The internet connection we have is sufficiently fast ".

Competence: Q11 How confident do you feel... a) using a text processor, b) creating a presentation c) using e-mail, d) downloading and installing software. Threshold: Average of 2.5 or more on a 1-4 confidence scale

Motivation: Q14 (8); disagree with "Using computers in class does not result in significant learning benefits".

For full question wordings refer to questionnaire.

7 http://forum.europa.eu.int/Public/irc/dsis/edtcs/library?l=/public/unesco_collection/programmes_isced97&vm=detailed&sb=Title

8 Densely populated area refers to a set of closely related local units, each one of which having a density greater than 500 inhabitants per km2, and the total population of which being of at least 50 000 inhabitants; Intermediate area refers to a set of closely related local units that do not pertain to a densely populated area, each one of which having density greater than 100 inhabitants per km2, and where the total population is at least of 50 000 inhabitants or it refers to a set that is adjacent to a highly populated area. Thinly populated area (rural): refers to a set of closely related local units that are not part of a densely populated area, or of an intermediate area. (A set of local areas totalling less than 100 km², not reaching the required density, but entirely enclosed within a densely-populated or intermediate area, is to be considered to form part of that area. If it is enclosed within a densely-populated area and an intermediate area it is considered to form part of the intermediate area).

9 Source: http://www.uis.unesco.org/profiles/selectCountry_en.aspx (visited 28 March 2006)

10 Source: http://www.eurydice.org/Documents/struct2/frameset_EN.html (visited: 28 March 2006)

11 Source: http://europa.eu.int/comm/education/policies/2010/nationalreport_en.html (visited: 9 May 2006)